

IN THE CLAIMS

Please amend the claims as follows:

Claims 1-14 (Canceled).

Claim 15 (Currently Amended): A method for shifting a refined microstructure of a metallic material, comprising:

solidifying a molten metallic material within a cylindrical tube at a temperatures
temperature lower than a liquidus of the molten metallic material to yield a solidifying molten
metallic material; and

vibrating the solidifying molten metallic material by applying an alternating electric current and a magnetic field simultaneously at a current value and a Tesla value respectively configured to crush solid crystal particles of the solidifying metallic material into small pieces; and

shifting the small pieces to a surface of a surrounding interior wall a periphery of a the
cylindrical tube ~~or container~~ with said alternating current and said magnetic field set at a current value and a Tesla value configured to concentrate said refined microstructure of the metallic material in ~~the~~ an outer periphery of the cylindrical tube or containersolidifying
metallic material.

Claims 16-17 (Canceled).

Claim 18 (Previously Presented): The method of Claim 15, wherein the applying further comprises applying the electric current and the magnetic field during last stages of solidifying of the solidifying metallic material.

Claim 19 (Canceled).

Claim 20 (Previously Presented): The method of Claim 15, wherein the magnetic field is generated with an electromagnetic coil enveloping the metallic material.

Claim 21 (Currently Amended): The method of Claim 15, wherein said current value ~~and used with said Tesla value configured to~~ crush solid crystal particles comprises:
a current value less than a current value used to melt said metallic material.

Claim 22 (Canceled).

Claim 23 (Previously Presented): The method of Claim 15, wherein said metallic material is Al-Si alloy and said small pieces have a crystal grain diameter between 0.5 and 3 μm .

Claim 24 (Canceled).

Claim 25 (Previously Presented): The method of Claim 15, further comprising:
concentrating said metallic material in an end portion of said metallic material by moving the metallic material within the magnetic field.